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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,638	11/24/2003	Bunya Sato	09792909-5715	7696
26263 7590 07/16/2007 SONNENSCHN NATH & ROSENTHAL LLP P.O. BOX 061080 WACKER DRIVE STATION, SEARS TOWER CHICAGO, IL 60606-1080			EXAMINER KITOV, ZEEV V	
			ART UNIT 2836	PAPER NUMBER
			MAIL DATE 07/16/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/721,638	SATO, BUNYA	
	Examiner	Art Unit	
	Zeev Kitov	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4 - 8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4 - 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on May 23, 2007. Claim 4 is amended. An Office Action follows.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter, which applicant regards as the invention. A reason for that is in a following claim limitation: "shut-off-holding means comprising a resistor block of resistance larger than 1 kohm and smaller than 200 kohms". The Specification though reciting the claim language does not provide sufficient explanation to the way of functioning of the "shut-off-holding means". It recites [0049]: the "shut-off-holding means" for shutting off abnormal discharge, and [0050]: the "shut-off-holding means" releases the discharge shutoff. No further details are provided. It is not clear, how simple resistor connected to battery terminals is able to fulfill such function as holding the shut-off state of the battery. The resistor is connected in parallel to a battery load and its only possible role in the circuit is a dummy load when a real load is disconnected. For purpose of examination, the "shut-off-holding means" of the claim is interpreted as a resistor block connected between the battery terminals.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (AAPA) in view of Lieser (US 3,480,940). AAPA discloses following elements of the claim: a battery pack including a battery cell and a protection circuit for shutting off overcurrent discharge, wherein the protection circuit including: a detector (18 in Fig. 29) for detecting voltage between an external plus terminal and the external minus terminal; wherein the load is inherently connected to the external plus terminal and the external minus terminal of the battery ([0018]), wherein abnormal discharge by shorting or connecting a low resistance between the external plus terminal and the external minus terminal of the battery pack is shut off ([0021] – [0025]), and the discharge shut-off is released to recover discharge upon detecting by the detector (18 in Fig. 29) a presence of a predetermined voltage between the external plus terminal and the external minus terminal of the battery pack ([0020]). However, it does not disclose the shut-off-holding means, i.e. a resistor block. Lieser discloses the batteries (30 in Fig. 1) provided with resistors (34 in Fig. 1) connected to the battery terminals. The reference has the same problem solving area, namely providing controllable charge and discharge of the batteries. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the AAPA solution by adding

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the resistor block connected to the battery terminals according to teachings of Lieser, because as Lieser states (col.2, lines 65 – 70), the resistors (28 and 34) set the charge and discharge rate of the batteries to keep the batteries voltage above predetermined minimum value. Additionally, such resistor block is necessary to prevent a load dump effect when upon disconnection of the battery in the car the voltage may jump up to a dangerous level. The battery control unit and switches 13 and 15 would not help in such case. As to the value of resistive block, according to AAPA ([0026]), a condition to recover from shut-off is that the resistance externally connected to external terminals of the battery pack is larger than 100 kohm.

Regarding Claim 5, AAPA discloses the detector (18 in Fig. 29) as voltage detector ([0018]).

Regarding Claim 7, AAPA discloses the discharge shut-off is made by a discharging control switch (13 in Fig. 29) connected between the battery cell negative terminal and the external minus terminal.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over (AAPA) in view of Lieser and Fasen et al. (US 4,767,977). Claim 6 differs from Claim 4 rejected above by its limitation of the detector being connected to a differentiation circuit. Fasen et al. disclose the detector (a voltage drop across resistor 64 in Fig. 1) being connected to the fast charge control circuit (37, 41, 43, 39, 45, 47 in Fig. 1) implementing slope detection, which is in fact the differentiating function. The reference has the same problem solving area, namely providing the battery charge/discharge control circuit. It

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would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the AAPA solution by adding the slope detection (differentiating) circuit according to teachings of Fasen et al. because as Fasen et al. state (col. 1, lines 13 – 23), after battery is fully charged the charging current is to be terminated to avoid heat build-up, which is dangerous to the battery.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over (AAPA) in view of Lieser and Mukainakano (US 6,403,261). Regarding Claim 8, Mukainakano discloses in figure 1, wherein the discharge shut-off by the shut-off holding means is made by a discharging control switch connected between the battery cell positive terminal and the external plus terminal (col. 3, lines 32 - 38). The reference has the same problem solving area, namely providing the battery charge/discharge control system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the AAPA solution by changing position of the discharge control switch from negative pole of the battery to the positive pole of the battery according to teachings of Mukainakano, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). According to Mukainakano (col. 7, lines 46 – 55), the upgraded circuit operates absolutely similarly to the previous version of the circuit. Since there is no advantage achieved by rearranging the parts, it is routine task of the designer to choose a particular location for the disconnecting switch.

Response to Arguments

1. Applicant's arguments have been fully considered but they are not persuasive. Applicant argues Claim 4 rejection under USC 112 alleging that Specification sufficiently explains the term "shut-off holding means" (resistor 31 in Fig. 1). However, regarding the "shut-off holding means", none of texts recited by Applicant explains a role of the resistor in the shut-off holding (page 17, lines 1 – 7, page 16, lines 26 – 31, page 17, line 30 through page 18, line 3). On page 18 (lines 12 – 15) the Specification just merely recites the claim language. A role of the resistor (31) in holding shut-off is not clear. Since Prior Art circuit (Fig. 29) is almost similar to the claimed invention (Fig. 1) with exception of the resistor, it is not clear what difference the resistors presence makes in the circuit. According to Specification (page 18, lines 3 – 10), the over-current conditions are detected according to a voltage value between the load terminals. This voltage value is applied to pin 23 of the control circuit and the low voltage is always detectable regardless of presence or absence of the resistor. Applicant recites Specification (page 5, lines 1 – 2) to show that when the switch 13 is open, the resistor 31 is not disconnected because "the diode 12 allows charging of the battery but disables discharge into the load". However, when the charge process is involved, the charging voltage must be higher than the battery voltage and therefore during normal charging process a voltage detector associated with pin 23 of control circuit would not be able to help maintaining the "shut-off holding" process, since the shut-off is initiated by a low voltage presence at pin 23. These contradictions prevent an appropriate understanding of the role of "shut-off holding means". Therefore, USC 112 rejection is sustained.

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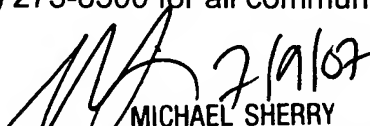
2. Applicant further argues Claim 4 rejection alleging that Lieser reference does not disclose "a shut-off holding means". The Argument is addressed above (see discussion of USC 112 rejection).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.


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